REMARKS/ARGUMENTS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Reconsideration and allowance of this application is respectfully requested.

Claims 3 to 8 and 11 to 14, are pending.

Claims 3 and 5 to 8 and 11 to 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over EP 732381 (EP 381) alone, or alternatively in view of Lent *et al.* (U.S. Pat. No. 5,837,042) (Lent 042). Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over EP 381 alone or alternatively, in view of Lent 042. and the newly cited U.S. 5,165,968 to Johnson et al..

Applicants respectfully disagree.

Throughout much, if not all, of the prosecution of this application, the rejection based on EP 381 has, at least in part, relied on an alleged correlation between polymer molecular weight and viscosity as providing motivation to choose polyurethanes with low molecular weight.

With all due respect it is submitted that to the extent that such reasoning is ever applicable, it is NOT applicable in the present case.

The polyurethanes used in the ink compositions of EP 381 are crosslinked gel fine particles. As such, the molecular weight[1] of the polyurethane in the gel particles would not be expected to correlate to the viscosity of the inks containing the gel particles. There is simply no evidence to suggest that the molecular weight of the polymer itself is or could be used to control viscosity of the ink containing the fine polymer gel particles.

As described in the working example of EP 381, the polymerization reactions are conducted in methylethylketone (MEK) and crosslinking is carried out by subsequent addition of aqueous polyamine. The MEK is removed by vacuum distillation to leave an aqueous dispersion of the 3D crosslinked fine polymer gel particles containing colorant. Although the increasing molecular weight of the polymer during its preparation, due to

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[1] The polymer fine particles of EP 381 have a 3D cross-linked structure with a gel component of at least 50%, preferably at least 70% (page 9, lines 4-6) which gel content is an essential requirement of the microencapsulation method of the reference. As explained in *"Principles of Polymerisation"* a gel is considered as one molecule and, as such, the molecular weight of the infinite network defining the gel is the weight of the total molecule, not of the component chains prior to cross-linking.

solvation of the polymer chains and swelling of the polymer, may increase viscosity, the solvent (MEK), as noted above, is removed by distillation after formation of the polymer leaving behind the aqueous dispersion of the dye encapsulated polymer. These colored polymer particles are then made into ink containing glycerine and water (*see, e.g.,* page 13, lines 3 to 6). The inks are printed (*i.e.,* are jettable) using a piezoelectric-type ink jet printer.

Again, it is clear that the viscosity of the inks containing the gel particles is not an issue in EP 381 given that the inks were successfully used in ink jet printing and notwithstanding that the polymer component of the gel has an essentially infinite molecular weight. The consideration by the patentees is the particle size and size distribution, not molecular weight. It is only the Applicants' disclosure which discusses molecular weight.

Accordingly, applicants maintain that it would not have been *prima facie* obvious (*e.g.*, there would not have been any motivation) to lower the molecular weight of the polyurethane in the fine gel particles of the ink formulations of EP 381 and there would not have been a reasonable expectation that lowering "molecular weight" would have any effect on viscosity of an ink containing polymer fine particles in the form of gel particles.

The rejection also asserts that EP 381 discloses dyes dissolved or dispersed in organic solvent. However, it is respectfully submitted that this disclosure refers to the preparation of the crosslinked gel particles, *i.e.*, the encapsulation process, and not to the condition or state of the dye in the ink used in ink jet printing.

With regard to the assertion that the disclosure at page 9, lines 7-14 of EP 381 is that viscosity of the ink is controlled by the water-immiscible solvent, it is respectfully submitted that this is not an accurate description. This disclosure refers to the preparation of the 3D crosslinked polymer and, more particularly, to the prepolymer prior to crosslinking. What is clear, however, is that the organic solvent must not react with the polyol (A), polyisocyanate (B) and polyamine (C). In this context, the addition of water-immiscible organic solvent is not related to the viscosity of the ink formulation.

Accordingly, it is respectfully urged that the Examiner reconsider the reliance on EP 381 as providing evidence that it would have been *prima facie* obvious to add solvent to further reduce viscosity of the ink.

In addition, the disclosure of EP 381 does not fairly suggest that the ink jet printing ink formulation should include, water-dissipatible polyurethane, water, colorant soluble in water-miscible solvent, and both a water-miscible solvent and a water-immiscible solvent. There is simply no disclosure or suggestion of mixtures of water-miscible and water-immiscible solvents in the ink jet ink formulation.

Therefore, for at least the above reasons it is respectfully submitted that the subject matters of claims 3, 5-8 and 11-14 would not have been *prima facie* obvious in view of EP 381 alone or in view of Lent *et al* (US 042).

Regarding the additional disclosure of Johnson, *et al* (US 5,165,968) (US 968), as applied to claim 4, this reference does not overcome the deficiencies of EP 381 and Lent US 042. Therefore, irrespective of the disclosure of benzyl alcohol as a penetrating agent, it still would not have been *prima facie* obvious to provide an ink jet printing ink composition having the features set forth in claim 4 (which includes all of the limitations of claim 13), which are not found in the prior art.

Moreover, it is respectfully submitted that it would not have been *prima facie* obvious in view of US 968 to include benzyl alcohol in the ink formulations of EP 381.

In EP 381, wherein an agent for imparting penetrating properties is mentioned as a "possible additive" (page 10, lines 46-48) it is only water miscible solvents, *e.g.,* lower alcohols, which are described (page 10, lines 49-50). Thus, notwithstanding the publication of US 968 at least more than two years prior to the earliest priority date of EP 381, the patentees of the ink formulations of EP 381 did not see fit to suggest the use of water-immiscible organic solvents as penetrating or drying agents for their ink jet ink formulations.

Accordingly, although US 968 may disclose water-immiscible solvents as penetration agents for polymer-free ink jet ink formulations, this reference does not provide evidence that use of water-immiscible penetration agents, including benzyl alcohol, would have been *prima facie* obvious in the ink jet printing inks of EP 381.

Accordingly, the rejection of claim 4 should also be withdrawn.

Consequently, the rejections in the last Office Action do not present a *prima facie* case of obviousness and the Applicants respectfully request that the rejections be withdrawn.

Therefore, all objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Should any issues remain unresolved, the Examiner is encouraged to contact the undersigned attorney for Applicants at the telephone number indicated below in order to expeditiously resolve any remaining issues.

Respectfully submitted,

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